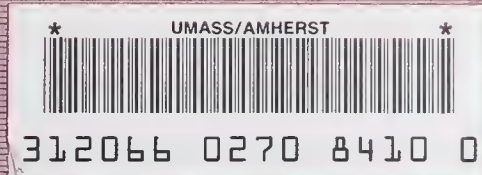


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INTERIM BASIN PLAN 1972

DEERFIELD RIVER
STUDY

INTERIM BASIN PLAN
FOR
ABATEMENT OF WATER POLLUTION
ON THE
DEERFIELD RIVER
IN
MASSACHUSETTS

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COMMONWEALTH OF MASSACHUSETTS

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I. DESCRIPTION OF THE DEERFIELD RIVER BASIN

The Deerfield River Valley contains some of New England's most scenic and remote areas. The forests near Monroe contain groves of beech, maple and birch, with intermixed patches of pine and spruce. This flora provides excellent habitat for the numerous deer, black bear and species of small game that feed in the area.

The Deerfield River begins in southwestern Vermont and flows in a generally southward direction, entering Massachusetts at the Rowe-Monroe town line. It flows southwest to the Town of Florida, then turns east through Savoy, Charlemont, and Buckland to Shelburne. There it turns southeast, flowing through Conway to Deerfield where it turns northeast, joining the Connecticut River at the Deerfield-Greenfield town line. Major tributaries include the Green and North Rivers which begin in Vermont and join the Deerfield in Greenfield and Shelburne respectively.

The Deerfield drains an area of over 600 square miles of which about 380 are in Massachusetts. The Massachusetts portion contains an estimated population of 32,500. The total length of the river in Massachusetts is 46 miles (Figure 1). Average flow at the U.S.G.S. gage in West Deerfield for the period from 1940 to 1957 was 1221 cubic feet per second. The seven day low flow with ten year frequency for this gage is 110 cfs (Table 2).

The entire basin lies within the area of the Franklin County Regional Planning Commission. To date the Commission has not prepared a regional plan, thus this interim basin also serves as the interim regional plan for the area.

In the summer of 1965 a river survey showed the river to be in generally clean condition, meeting the established oxygen standards, in every reach (Figures 3 and 4). High coliform counts were found through Buckland and Shelburne and also below the Green River (Figure 5). There was no evidence of thermal pollution in the reaches below the Nuclear Power Plant at Rowe. (Deerfield River Report Part A)

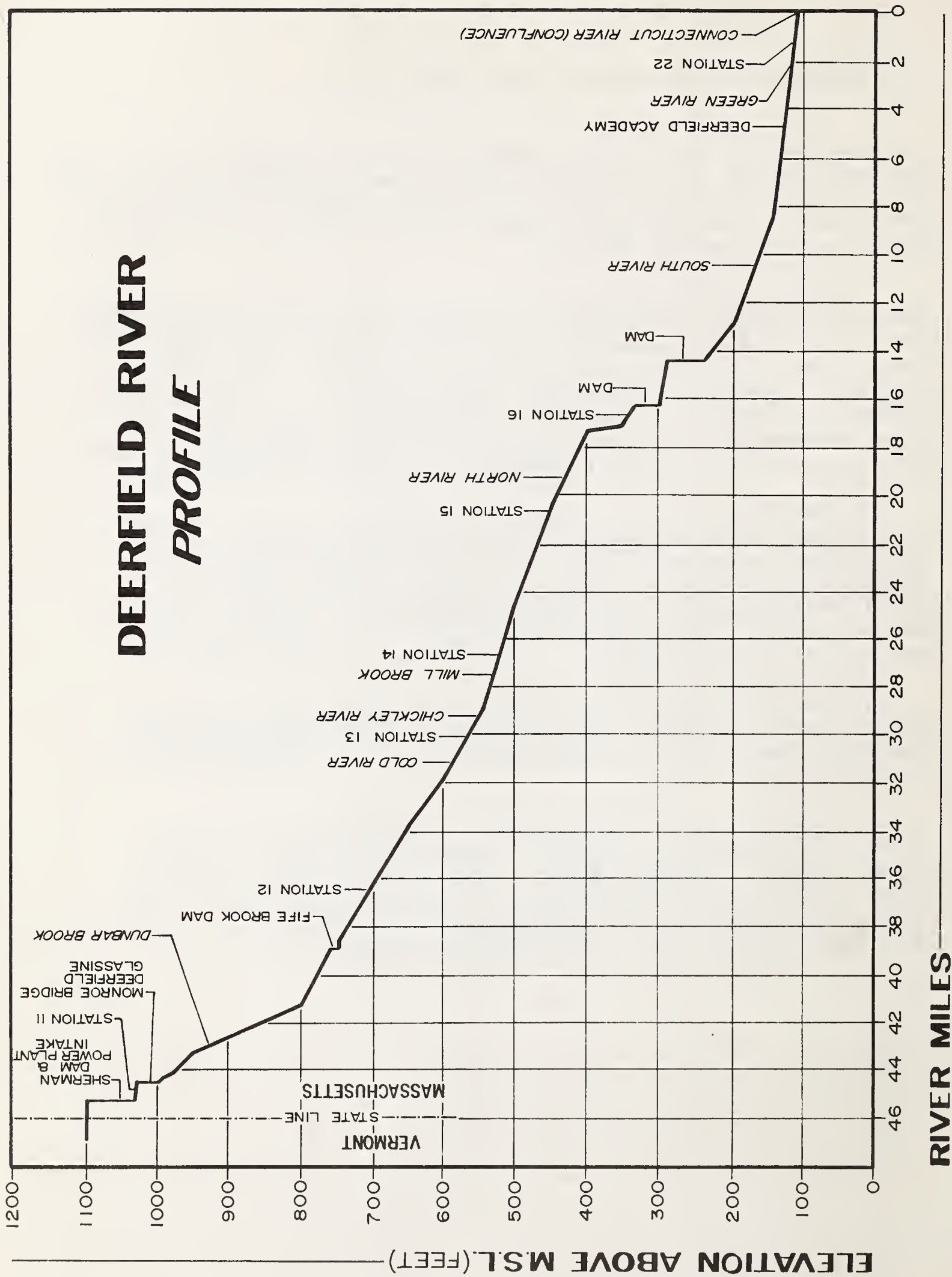
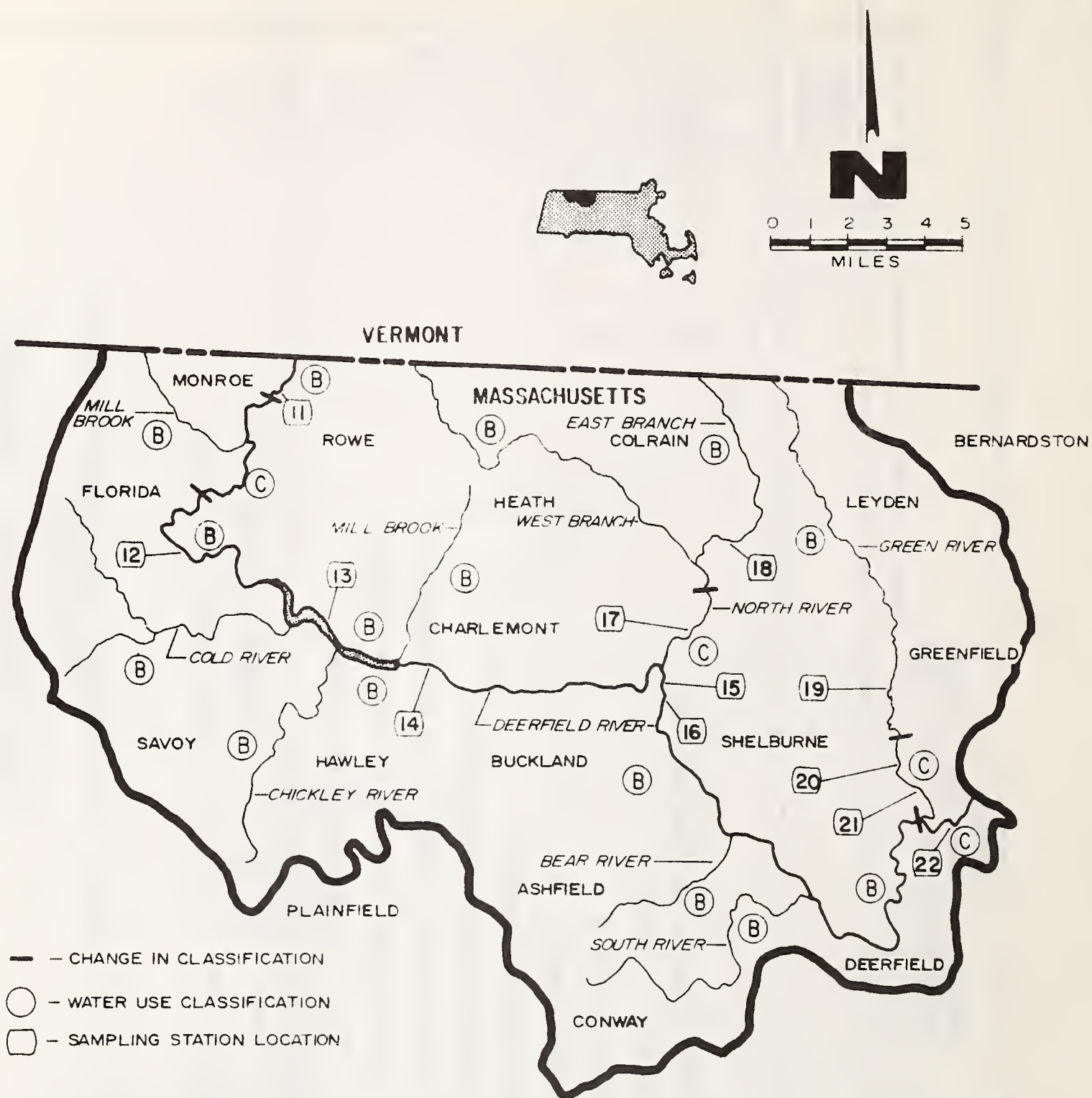


FIGURE 1

TABLE 1
LOCATION OF SAMPLING STATIONS
DEERFIELD RIVER STUDY - 1965

STATION NUMBERS		RIVER MILES
11	Monroe Bridge Power Canal below Sherman Dam	40.3
12	Florida Bridge at Hoosic Tunnel	33.9
13	Charlemont Bridge on Route 2	27.3
14	Charlemont below town center	23.9
15	Shelburne Falls Bridge on Route 2	19.1
16	Shelburne Falls intake to power station	14.9
17	Colrain (North River) Bridge on Route 112 Shattuckville	19.2
18	Colrain (North River) Bridge on Route 112 above Colrain	19.2
19	Greenfield (Green River) Bridge on Silver Street	2.1
20	Greenfield (Green River) Bridge on Route 2	2.1
21	Greenfield (Green River) below Greenfield Sewage Treatment Plant	2.1
22	Greenfield Bridge on Route 5 after confluence with Green River	1.2

River mile 0.0 at the confluence of the Connecticut and Deerfield Rivers.



DEERFIELD RIVER

CLASSIFICATION MAP & LOCATION OF SAMPLING STATIONS

FIGURE 2

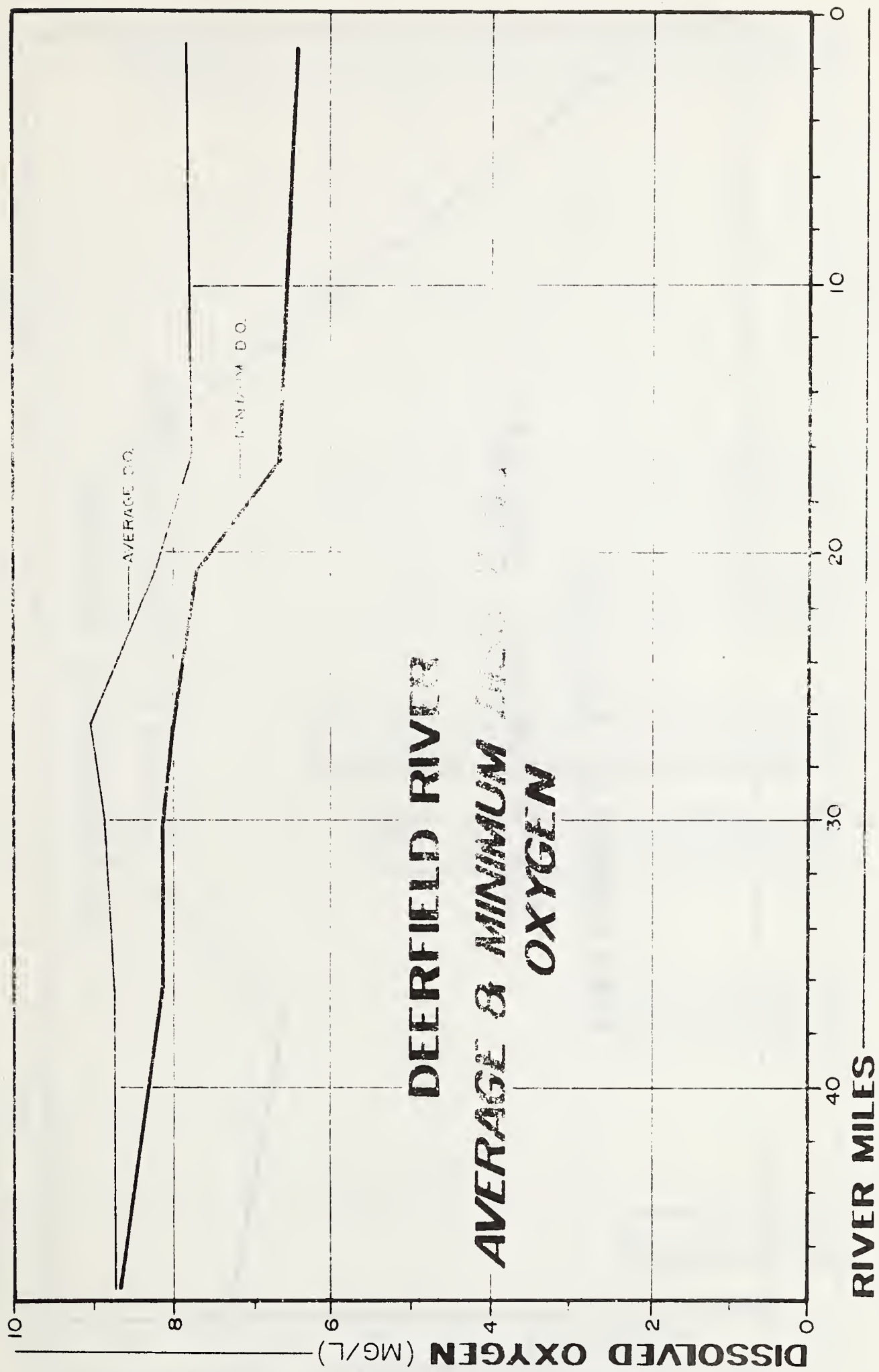


FIGURE 3

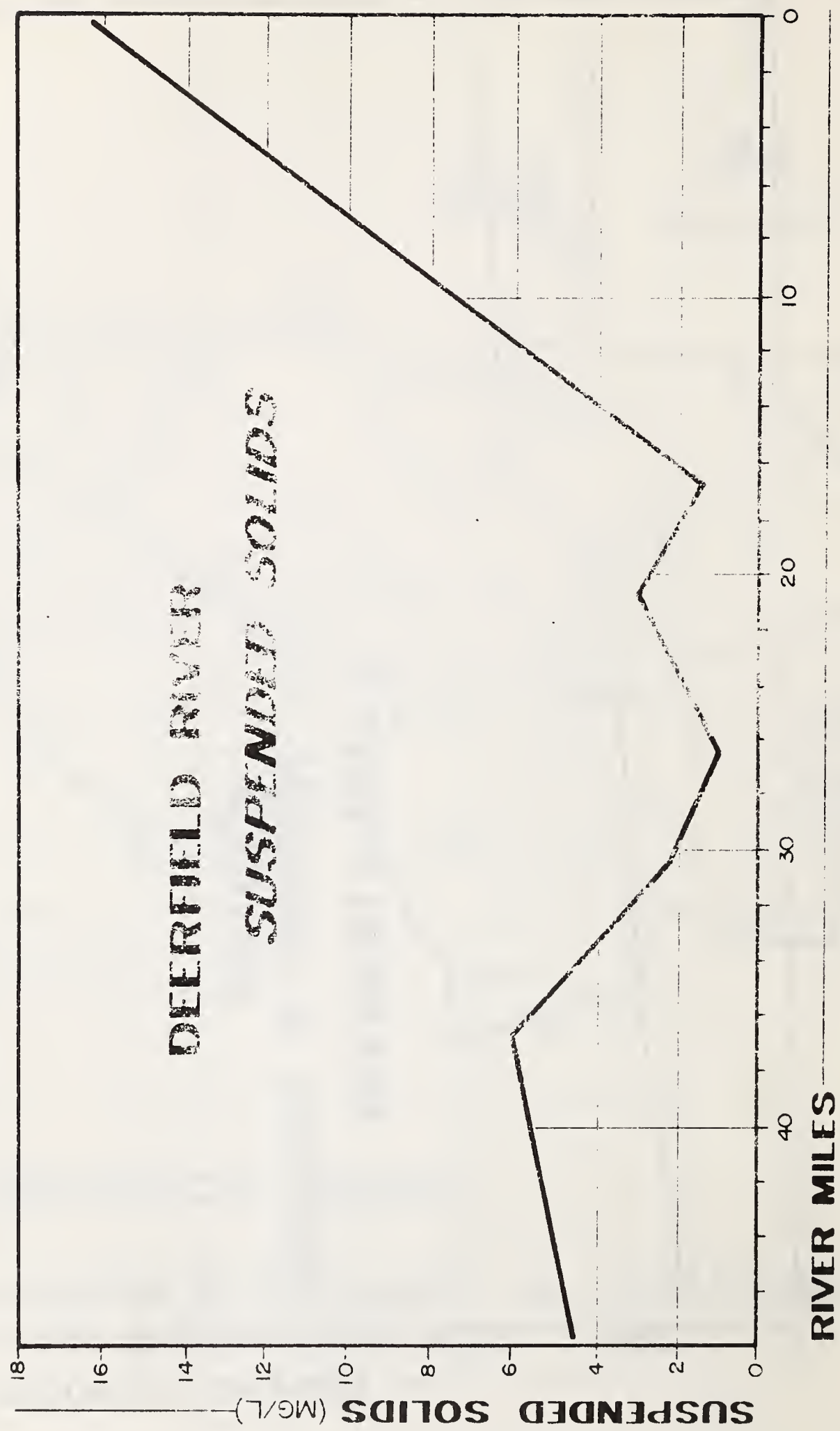


FIGURE 4

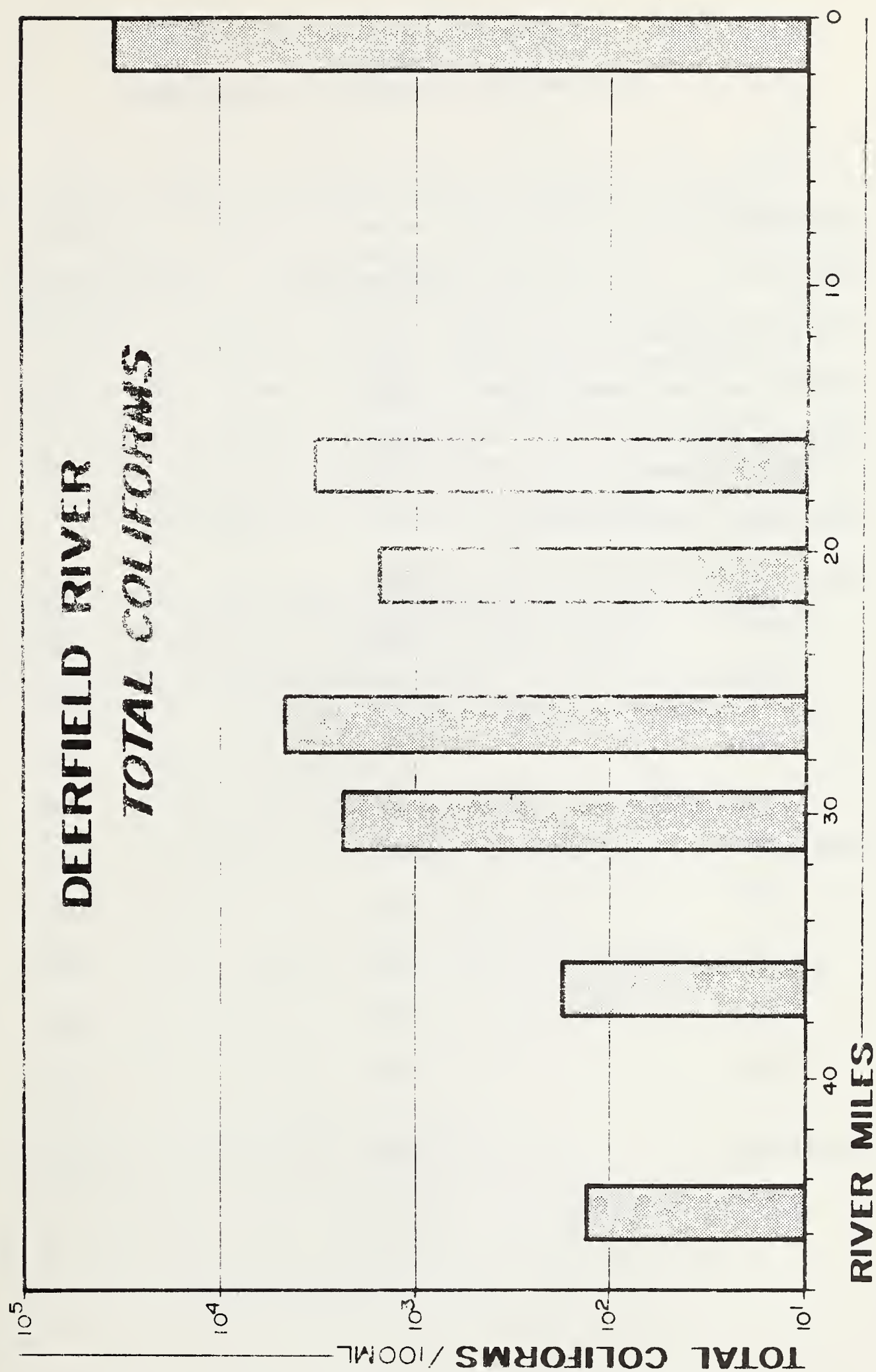


FIGURE 5

TABLE 2
FLOW DURING 1965 DEERFIELD RIVER STUDY

Gage Number		1-1685	1-700
Location		Charlemont	West Deerfield
Average Discharge		877	1230
Drainage Area in Square Miles		362	558
7-Day Low Flow (10 year frequency)		68.7	110
Flow, Cubic Feet per Second			
July	20	368	523
	21	298	341
	22	247	339
	23	420	336
	Avg.	330	385
August	17	565	672
	18	652	597
	19	652	780
	20	660	895
	Avg.	632	736
Overall Avg.		483	560

II. SOURCES OF POLLUTION

There are 14 sources of pollution in the Deerfield River Basin, including domestic sewage from South Deerfield which is discharged to the Connecticut River (Table 3). Of the remaining 13, one is a nuclear power plant located just below the state line which uses the Deerfield River for cooling water. A paper company in Monroe and a steel products manufacturer discharge industrial wastes to the Deerfield. Domestic sewage from the Towns of Monroe, Charlemont, and Deerfield enter the Deerfield while wastes from Colrain, Shelburne, and Buckland are discharged to the North River. Another tributary of the Deerfield, the South River, receives wastes from the Towns of Ashfield and Conway. A private institution discharges domestic wastes to the Deerfield in the Town of Deerfield. The Town of Greenfield operates a sewage treatment plant which provides primary treatment. The plant effluent is discharged to the Green River half a mile above its confluence with the Deerfield.

The sewage flows projected for 1990 are based on the assumption of a rather low rate of population growth (Tables 4 and 5). Although the Deerfield River Basin is an important tourist area, it has a history of slow industrial and population growth, due to its remoteness from urban centers.

TABLE 3
SUMMARY OF WASTE DISCHARGES - DEERFIELD RIVER SURVEY

Sta.	Town	Source	Receiving Water	Deerfield River Mile	Tribu- tary Mile
1	Rowe	Yankee Atomic Power	Deerfield R.	45	
2	Monroe	Deerfield Glassine Company		44.5	
3		Monroe Bridge Sewage		44.4	
4	Charlemont	Town of Charlemont		27.5	
5	Colrain	Griswoldville Sewage	North River	19.2	3.5
6		Kendall Mills			2.7
7	Shelbourne	Buckland and Shelbourne Falls Sewage		17.6	
8		Mayhew Steel Products	Deerfield R.	17.5	
9	Ashfield	Town of Ashfield	South River	10.3	7.0
10	Conway	Town of Conway			4.5
11	Deerfield	Old Deerfield Sewage	Deerfield R.	3.7	
12		Deerfield Academy		3.5	
13	Greenfield	Greenfield Sewage Treatment Plant	Green River	2.1	0.6



DEERFIELD RIVER ***LOCATION OF WASTEWATER DISCHARGES***

FIGURE 6

TABLE 4

POPULATION PROJECTIONS
FOR DEERFIELD RIVER BASIN

	1965	1970	1990
Ashfield	1,218	1,274	1,300
Buckland	1,846	1,392	2,000
Charlemont	903	897	1,000
Colrain	1,461	1,420	1,500
Conway	948	998	1,000
Deerfield	3,481	3,850	5,000
Florida	679	672	700
Greenfield	15,500	18,116	22,500
Heath	300	383	400
Leyden	343	376	400
Monroe	213	216	250
Savoy	303	302	350
Shelburne	1,819	1,836	2,000
TOTAL	32,263	32,476	38,650

TABLE 5

SOURCES OF POLLUTION ON THE DEERFIELD RIVER

Owner	1965 Discharge - Raw		1990 Discharge - Raw	
	Flow cfs	3005 mg/l	Flow cfs	3005 mg/l
Yankee Atomic - Rowe	300*	--	--	--
Deerfield Glassing	3.2	162	3.5	162
Monroe Bridge	0.04	240	0.1	240
Charlemont	Individual Homes	240	0.1	240
Wendall Mills	2.0	240	3.2	240
Buckland	0.3	240	0.6	240
Shelburne	0.2	240	0.4	240
Mayhew Steel (Shelburne)	SUBSURFACE DISPOSAL			
Ashfield	Individual Homes	240	0.2	240
Conway	Individual Homes	240	0.2	240
Old Deerfield** Deerfield Academy	0.64	240	1.0	240
Greenfield	3.84	244	5.1	240
TOTALS*	10.22		14.4	

*Cooling water discharge not included

**South Deerfield discharges to the Connecticut River

III. ABATEMENT PROGRAM

Eight municipalities in the Deerfield Basin have been ordered to construct adequate sewerage systems and give secondary treatment to the wastewaters before discharging them to the river. The remaining municipalities (Florida, Savoy, Hawley, Heath and Leyden) have such sparse populations that public sewers are not needed in the foreseeable future. The towns are quite small and there is no question that secondary treatment is adequate for their discharges.

The industries have all been ordered to abate their pollution. Mayhew Steel Products is discharging treated wastes to a subsurface disposal system; Kendall Company is installing the equivalent of secondary treatment and Deerfield Glassine Company has completed their secondary treatment plant.

The Massachusetts Yankee Atomic Plant in Rowe (180 Megawatts) draws cooling water from the reservoir behind Sherman Dam and discharges the heated water back to the reservoir. No thermal pollution problems have been observed, although it is known that the discharge prevents ice formation on the reservoir.

The Bear Swamp Pumped Storage Project of New England Power Company will be located 3 miles below Sherman Dam. A new Dam will be constructed below Fife Brook. The water will then be pumped to Bear Swamp about 700 feet above the Deerfield.

The Division has certified the application of New England Power for construction of the Bear Swamp Project with the stipulation that a minimum discharge of 100 cfs be maintained below the Fife Brook dam during the fishing season and a minimum of 50 cfs for the rest of the year. It is expected that there will be no thermal problem associated with the pumped storage project but an investigation will be made to verify this.

The only regional arrangement for sewage treatment facilities is the joint Buckland-Shelburne treatment plant. The other municipalities are too far apart to make joint facilities economically feasible.

IV. IMPLEMENTATION PROGRAM

Four polluters have completed their facilities for abating pollution, the Town of Deerfield, Deerfield Academy, Mayhew Steel Products and Deerfield Glassine Company.

Two polluters are constructing their treatment facilities as of September 1971, The Kendall Company and the Village of Monroe Bridge. Engineering reports have been submitted by three others (Buckland-Shelburne, Ashfield and Greenfield). Only Conway and Griswoldville have failed to submit reports. They are both minor sources of pollution so it is expected that most of the pollution in the Deerfield will be remedied by the time Greenfield completes construction of its treatment plant, around 1973 (Figure 7).

SOURCE	1969	1970	1971	1972
Buckland-Shelburne				
Mayhew Steel Products				
Griswoldville (Colrain)				
Kendall Co.				
Deerfield				
Deerfield Academy				
Greenfield				
Monroe (Monroe Bridge)				
Deerfield Glassine				
Conway •				
Ashfield •				
• NOTE — Reports only - No scheduled completion date				

DEERFIELD RIVER
SCHEDULE FOR COMPLETING
WATER POLLUTION
ABATEMENT PROGRAM

FIGURE 7

